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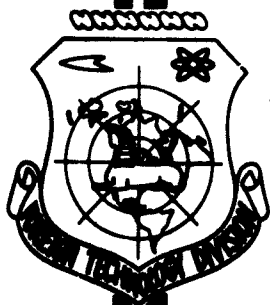
# TRANSLATION

BIOTICS FORM THE MAGNETIC TAPE RECORDER

By

V. Mikhal'chenko and S. Tsikora

## FOREIGN TECHNOLOGY DIVISION



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## UNEDITED ROUGH DRAFT TRANSLATION

BIOTICS FORM THE MAGNETIC TAPE RECORDER

BY: V. Mikhail'chenko and S. Tsikora

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## Biotics form the Magnetic Tape Recorder

by

V.Mikhail'chenko; S.Tsikora

At a lecture concerning the All Union Symposium, devoted to the use of cybernetics in medicine, biology and physiology which was held in the city of Tbilisi, we have read " The attention of symposium participants was attracted by the report of young Kiev scientists - co-workers of the computation center of the Academy of Sciences Ukr-SSR Georgiy Kolesnikov and Viktor -----Kiy. They told about their creation of a bioelectrostimulator, which offers the possibility of controlling the functioning of individual nerve-muscular systems and certain human organs. Especially, with the aid of amplified (boosted ) biotics it is possible to name any given movement..."

We are telephoning the Department of biocybernetics of the Computation Center at the Academy of Sciences Ukr-SSR. We spoke with one of the creators of the bioelectrostimulator engr.Viktor Ivanovich Kiy :

- Can you show us the bioelectrostimulator ?

- Of course. Our apparatus is intended for patients, but its action is harmless and you can take part in the experiment.

We become acquainted with the author of the biostimulation method Doctor Georgiy Filippovich Kolesnikov. We are asking that the experiment begin.

- Control signals formulated in the cortex cerebri, biotics have a specific electric potential, -explains the doctor.- It means they can be taken down with the aid

of electrodes, amplified, and then they will-----begin performing wonders. You will be able to convince yourself about it...

We stretch out the unsleeved right arms, on which the nurse applies cold electrodes and tightens them solidly with -----bandages. Now we are firmly connected with the instrument - amplifier of biopotentials. One of us takes a seat on a couch, the second one on a stool. The distance between us - four meters.

The doctor shifted the handle of the instrument, a straight luminous dot jumped across the oscillograph screen.

After this the one who sat on the couch received a verbal order: slowly bending his right hand.

Momentarily the second one received a slight jolt in the point, where the electrodes have been applied and a slight pricking sensation. Then, verbally, as if somebody took a hold of his wrist and pulled it upwards. The muscles of the arm became very taut, and it began by itself slowly bending in the elbow joint...

- Now you try to interfere (resist) with the <sup>bending/</sup> -proposed G.F. Kolesnikov;

It is no sense trying; the arm only gave a shudder from the stress, and persistently continued bending.

Be perfectly at ease - the doctor assured. Even the strongest person in the world if he would be in your place, would look no better. On the contrary, Yuriy Vlasov having obtained amplified biotics with command compression, jerks or jolts of the bar, he would have to withstand a load by much exceeding the present achievement. Only the joints and bones could withstand it. Now turn your attention to the oscillograph. As you see: the straight line transformed into an impetuously running fence. These bio currents of your colleague, originating during the bending of the arm. Their electric potential was many times amplified by an amplifier, and consequently your friend was stronger than you.

And now, said the doctor, we want to propose that one of you should experience

the effect of biocurrents recorded on a magnetic tape by an ordinary sound recorder with two amplification stages "the looser with satisfaction gave his colleague the possibility to be the first one to test the "magic magnetic tape" and laughed inwardly when it, in spite of his natural will, raised the arm, bent and unbent it, in reality repeating the movements of an unknown man, the biocurrents of which have been recorded in form of electric pulses on a magnetic tape long before our visit.

- In the bioelectric stimulator lies a great future,- said Georgiy Filippovich Kolesnikov after the experiment.- It may for example control the rhythm of cardiac activity, respiratory activity. It will be especially useful in restoring the operation of a stopped heart or normalize the cardiac rhythm at an increase in frequency of heart beat.

The employment of amplified biocurrents is a highly fascinating problem, the development of which should be crowned by the creation of an apparatus, capable of controlling the biochemical reactions in the organism - continued G. Kolesnikov.- It will then be possible to rejuvenate an older organism, hooking to it up the metabolism of a younger person. This is a thing of the future. And so far we are making the first steps. You know that the lab of bioelectric stimulation is only one year old. You have seen our first born - "Bioelectrostimulat-1". With its aid we have developed a method of diagnosing and treating paralytics. Especially such patients, which are the result of afflicting the motorial centers of the cortex cerebri.

The nature of this lies on the fact that to treat a patient are used the biocurrents of a healthy person. Outwardly the same thing is happening as during the time of the experiment, in which you have participated. The biocurrents taken down with the aid of electrodes from a large peripheral nerve and amplified many times, are directed to the single nerve of the patient causing a contraction of the paralytic muscle and a movement in the afflicted joint. It is --- an/<sup>immobilized</sup> so far arm or leg under the effect of "donor" biocurrents and it suddenly begins moving. But such a movement is not the main purpose here. It is important that in this way it is possib-

le to a considerable extent to restore the ordinary nervous pulsation, normalizing the metabolism in the afflicted organ. Thanks to bioelectric stimulation in connection with other therapeutical measures it is possible to restore to motorial centers the lost ability of controlling the extremities.

We must say it right here and there that bioelectric stimulation will not help in inveterate paralysis, because so far it is impossible to restore to life atrophied muscles, to restore deformed joints. This method may offer positive results only in early stages of paralysis, which appears to be the result of encephalitis, meningo-encephalitis, trauma of the brain, as well as caused by afflictions of the peripheral section of the nervous system of infectious or traumatic nature.

- Is the new method being introduced into therapeutical practice ?

The "bioelectrostimulator 1" underwent tests at the poliomyelitis department of the Kiev Institute of Infectious Diseases. Here it was used to diagnose the excitability of nerves and muscles among sick children. The apparatus has proven itself quite well.

We were shown the patent application for a new method of diagnosing and stimulating the nervous-muscular apparatus of a human being by applying amplified oscillations of the biopotential. In this document was written black on white that the Committee on Matters of Inventions and Discoveries at the Soviet of Ministers USSR recommend the Ministry of Health in the USSR to adopt the invention by G.F.Kolesnikov, V.I.Kiy and A.M.Sirchin (third creator of the apparatus) for realization. This was back in August of last year, but so far the Ministry has done nothing about it, to order the manufacture of these devices. We would like to quote at least the Leningrad plant "Biofizpribor" which so far has produced certain component parts of the "bioelectricstimulator-1". And the ----- patients, having heard about the wonderful method of treating paralysis are flooding the department of biocybernetics of the computation center of the Academy of Sciences Ukr-SSR with letters appealing for the cure of serious illnesses.

We are ready at any given time to offer technical documentation of our invention to any plant manufacturing medicinal equipment, which would take ----- the construction



of the bioelectrostimulat seriously - says G.F.Kolesnikov. The apparatus can be done in two variants - cabinet type and portable.

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